

CLAIMS

1. A signal transmission circuit comprising:
 - first and second power supply lines;
 - 5 a first transmission line;
 - a first transmitter, connected to an input of said first transmission line and powered by said first and second power supply terminals, for receiving a first input signal to transmit a signal corresponding to said first input
 - 10 signal to the input of said first transmission line, a voltage amplitude of said transmitted signal being smaller than a voltage amplitude defined by said first and second power supply terminals;
 - a first receiver, connected to an output of
 - 15 said first transmission line and powered by said first and second power supply terminals, for receiving said transmitted signal, adjusting a voltage of said received signal in accordance with a bias voltage to generate a voltage adjusted signal, and wave-shaping said voltage adjusted signal to
 - 20 generate a first output signal; and
 - a bias circuit, connected to said first receiver and powered by said first and second power supply terminals, for differentially amplifying said first output signal and an inverted signal thereof to generate said bias
 - 25 voltage, said bias circuit including a capacitor charged and discharged in accordance with said bias voltage.
2. The signal transmission circuit as set forth in claim 1, wherein said first receiver increases or decreases a difference between the voltage of said received signal and
- 30 the voltage of said voltage adjusted signal in accordance with a change of said bias voltage.
3. The signal transmission circuit as set forth in claim 1, wherein said first transmitter comprises:

a first P-channel MOS transistor having a source connected to said first power supply terminal, a gate for receiving said first input signal, and a drain;

5 a first N-channel MOS transistor having a source connected to said second power supply terminal, a gate for receiving said first input signal, and a drain connected to the input of said first transmission line;

10 a second N-channel MOS transistor connected between the drain of said first P-channel MOS transistor and the drain of said first N-channel MOS transistor, a definite voltage being applied to a gate of said second N-channel MOS transistor.

4. The signal transmission circuit as set forth in claim 3, wherein said first receiver comprises:

15 a load connected to said first power supply terminal;

a current source connected to said second power supply terminal;

20 a third N-channel MOS transistor, connected between said load and said current source, said third N-channel MOS transistor having a gate for receiving said bias voltage; and

25 a wave-shaper, connected to a node between said load and said third N-channel MOS transistor and powered by said first and second power supply terminals, for comparing a voltage at said node with a threshold voltage.

5. The signal transmission circuit as set forth in claim 4, wherein said first receiver further comprises an inverter connected to said wave-shaper.

30 6. The signal transmission circuit as set forth in claim 5, wherein said bias circuit further includes:

second and third P-channel MOS transistor, connected to said first power supply terminal and controlled

by said first output signal and its inverted signal,
respectively;

a current mirror circuit formed by fourth and
fifth N-channel MOS transistors having an input connected to
5 said second P-channel MOS transistor and output connected to
said third P-channel MOS transistor and said capacitor; and

a sixth N-channel MOS transistor connected
between said current mirror circuit and said second power
supply terminal,

10 said capacitor being connected to said second
power supply terminal.

7. The signal transmission circuit as set forth in
claim 1, wherein said first transmitter comprises:

a first P-channel MOS transistor having a
15 source connected to said first power supply terminal, a gate
for receiving said first input signal, and a drain connected
to the input of said first transmission line;

a first N-channel MOS transistor having a
source connected to said second power supply terminal, a gate
20 for receiving said first input signal, and a drain;

a second P-channel MOS transistor connected
between the drain of said first P-channel MOS transistor and
the drain of said first N-channel MOS transistor, a definite
voltage being applied to a gate of said second P-channel MOS
25 transistor.

8. The signal transmission circuit as set forth in
claim 7, wherein said first receiver comprises:

a load connected to said second power supply
terminal;

30 a current source connected to said first power
supply terminal;

a third P-channel MOS transistor, connected
between said load and said current source, said third

P-channel MOS transistor having a gate for receiving said bias voltage; and

5 a wave-shaper, connected to a node between said load and said third P-channel MOS transistor and powered by said first and second power supply terminals, for comparing a voltage at said node with a threshold voltage.

9. The signal transmission circuit as set forth in claim 8, wherein said first receiver further comprises an inverter connected to said wave-shaper.

10 10. The signal transmission circuit as set forth in claim 9, wherein said bias circuit further includes:

15 second and third N-channel MOS transistor, connected to said second power supply terminal and controlled by said first output signal and its inverted signal, respectively;

a current mirror circuit formed by fourth and fifth P-channel MOS transistors having an input connected to said second N-channel MOS transistor and output connected to said third N-channel MOS transistor and said capacitor; and

20 a sixth P-channel MOS transistor connected between said current mirror circuit and said first power supply terminal,

said capacitor being connected to said first power supply terminal.

25 11. The signal transmission circuit as set forth in claim 1, further comprising:

at least one second transmission line;

30 at least one second transmitter, connected to an input of said second transmission line and powered by said first and second power supply terminals, for receiving a second input signal to transmit a signal corresponding to said second input signal to the input of said second transmission line, a voltage amplitude of said transmitted signal being

smaller than a voltage amplitude defined by said first and second power supply terminals;

at least one second receiver, connected to an output of said second transmission line and powered by said first and second power supply terminals, for receiving said transmitted signal, adjusting a voltage of said received signal in accordance with said bias voltage to generate a voltage adjusted signal, and wave-shaping said voltage adjusted signal to generate a second output signal.

10 12. The signal transmission circuit as set forth in claim 11, wherein said second transmitter has the same configuration as said first transmitter, and said second receiver has the same configuration as said first receiver.

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